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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/602,037	06/23/2000	James R. Bortolini	Bortolini 20-13-87-4-27	9055

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EXAMINER	
LEO, LEONARD R	
ART UNIT	**PAPER NUMBER**
3753	9

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/602,037	BORTOLINI ET AL.	
	Examiner	Art Unit	
	Leonard R. Leo	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *17 and 24-27* is/are withdrawn from consideration.

5)☒ Claim(s) *1-10* is/are allowed.

6)☒ Claim(s) *11-16 and 18-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The Advisory action mailed October 29, 2003 is withdrawn. The Office action mailed May 20, 2003 was incorrectly entered as a Final Office action in the docket.

The amendment filed on August 25, 2003 has been entered.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 11-13 and 18-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-12 and 14-16 of U.S. Patent No. 6,304,447 in view of Wickelmaier et al.

The patent claims all the claimed limitations of the application except an electromechanical actuator.

Wickelmaier et al discloses an electronic assembly comprising a substrate 2 with components 4; and a circulating fluid via electromechanical actuator 8 for the purpose of improving heat exchange.

Since the patent and Wickelmaier et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Wickelmaier et al would have been recognized in the pertinent art of the patent.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in the patent an electromechanical actuator piezoelectric actuator for the purpose of improving heat exchange as recognized by Wickelmaier et al.

Claims 14-16 and 21-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-12 and 14-16 of U.S. Patent No. 6,304,447 in view of Wickelmaier et al as applied to claims 11-13 and 18-20 above, and further in view of Murphy et al.

The combined teachings of the patent and Wickelmaier et al lacks a piezoelectric actuator.

Murphy et al discloses a fan comprising a rigid blade 12 and piezoelectric actuator 20 for the purpose of optimizing space and power requirements.

Since the patent and Murphy et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Murphy et al would have been recognized in the pertinent art of the patent.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in the patent a piezoelectric actuator for the purpose of optimizing space and power requirements as recognized by Murphy et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-13, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wickelmaier et al in view of Rohner.

Wickelmaier et al discloses all the claimed limitations except liquid as the working fluid.

Rohner discloses an electronic assembly comprising a substrate 12 with components 10; and a circulating liquid 44 via pump 32 for the purpose of improving heat exchange.

Since Wickelmaier et al and Rohner are both from the same field of endeavor and/or analogous art, the purpose disclosed by Rohner would have been recognized in the pertinent art of Wickelmaier et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Wickelmaier et al a circulating liquid for the purpose of improving heat exchange as recognized by Rohner.

Regarding claim 12, Rohner discloses a first upper aperture 47 and a second bottom aperture 62.

Regarding claim 20, the substrate 12 of Rohner is oriented in a vertical direction.

Claims 14-16 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wickelmaier et al in view of Rohner as applied to claims 11-13, 18 and 20 above, and further in view of Murphy et al, as applied in the double patenting rejection above.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wickelmaier et al in view of Rohner as applied to claims 11-13, 18 and 20 above, and further in view of Suga et al.

The combined teachings of Wickelmaier et al and Rohner lacks an external circuit board portion.

Suga et al discloses an electronic assembly comprising a circuit board 10 with components 3; circulating working fluid 7 via a pump; and external circuit board portion (Figures 3B and 12) for the purpose of attaching the circuit board to a main or mother board 110.

Since Wickelmaier et al and Suga et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Suga et al would have been recognized in the pertinent art of Wickelmaier et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Wickelmaier et al an external circuit board portion for the purpose of attaching the circuit board to a main or mother board as recognized by Suga et al.

Allowable Subject Matter

Claims 1-10 are allowed.

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

The rejection under 35 U.S.C. 112, second paragraph, is withdrawn.

Applicants' remarks with respect to the double patenting rejection have been fully considered but they are not persuasive. First of all, U.S. Patent No. 6,304,477 claims all the

claimed limitations of the application, including the "liquid," but does not disclose an electromechanical actuator. The statement in the Office action, "Wickelmaier et al discloses an electronic assembly comprising a substrate 2 with components 4; ***and a circulating fluid via electromechanical actuator 8 for the purpose of improving heat exchange***." is correct. A person having ordinary skill in the art of heat exchange fully acknowledges that the term "fluid" comprises a liquid or gas. The structure applicants referred to as a "fan" is merely a name given to a device for moving gaseous fluid, whereas a "pump" is typically a name given to a device for moving liquid. Both devices are typically "electromechanical actuators." One of ordinary skill in the art would recognize the common function of the aforementioned electromechanical actuators is to provide motility to a fluid, i.e. gas or liquid. Furthermore, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Therefore, Wickelmaier et al fairly suggests employing an electromechanical actuator within a fluid tight compartment with a circuit board to improve convective heat transfer.

Applicants' remarks with respect to Murphy merely stands or falls with the double patenting rejection above.

Applicants' remarks with respect to the obviousness rejection have been fully considered but they are not persuasive. The primary reference of Wickelmaier et al discloses all the claimed limitations except liquid as the working fluid. Wickelmaier et al discloses a compartment

providing a fluid tight barrier for the enclosed electromechanical actuator and circuit board. The secondary reference of Rohner teaches one of ordinary skill in the art to employ a liquid as the working fluid for the purpose of improving heat exchange. A person having ordinary skill in the art of heat exchange fully acknowledges that the convective thermal coefficient of liquids is typically better than gases. Rohner is not relied to teach what Wickelmaier et al already discloses, namely an electromechanical device within the compartment. As noted above in the double patenting rejection, the electromechanical actuator of Wickelmaier et al provides motility for a fluid, i.e. gas, and the electromechanical actuator of Rohner provides motility for a fluid, i.e. liquid. To merely substitute one heat exchange fluid for another does not impart patentability. Applicants' proposed modification of replacing the internal electromechanical actuator of Wickelmaier et al with an external internal electromechanical actuator of Rohner would destroy the reference of Wickelmaier et al.

Applicants' remarks with respect to the rejection of the remaining claims merely stands or falls with the obviousness rejection above.

Although the copending application, which is now a patent, is referenced on page 15 of the specification, a proper citation on a PTO-1449 along with a copy of the application would have expedited prosecution. Applicants are required to update the status of any copending application(s) referenced in the specification.

Applicant is reminded of his duty to disclose under 37 CFR § 1.56, which states in part:

> **Duty to disclose information material to patentability.**
> (a) A patent by its very nature is affected with a public interest. ***The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability.*** Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the

> Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned.

The Examiner hereby requests any and all pertinent documents related to the above application and any other related copending applications and/or patents.

Applicants must acknowledge this rule or a Notice of Non-Responsive Amendment will be forthcoming.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648. Status of the application may also be obtained from the Internet: http://pair.uspto.gov/cgi-bin/final/home.pl

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.

LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3743

November 18, 2003